

We Claim:

1. An isolated BTA nucleic acid molecule of at least 30 nucleotides which hybridizes to SEQ ID NO. 1, or the complement of SEQ ID NO. 1, under stringent hybridization conditions.
- 5 2. An isolated nucleic acid molecule which comprises:
 - (i) a nucleic acid sequence having substantial sequence identity or sequence similarity with a nucleic acid sequence of any one of SEQ. ID. NOs. 1 through 8;
 - (ii) nucleic acid sequences complementary to (i);
 - (iii) nucleic acid sequences differing from any of the nucleic acid sequences of (i) or (ii) in codon
10 sequences due to the degeneracy of the genetic code; or
 - (iv) a fragment, or allelic or species variation of (i), (ii) or (iii).
3. A vector comprising a nucleic acid molecule of claim 2.
4. A host cell comprising a nucleic acid molecule of claim 2.
5. A method for preparing a protein comprising:
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 - (a) transferring a vector as claimed in claim 3 into a host cell;
 - (b) selecting transformed host cells from untransformed host cells;
 - (c) culturing a selected transformed host cell under conditions which allow expression of the protein;
and
 - (d) isolating the protein.
- 20 6. A protein prepared in accordance with the method of claim 5.
7. An antibody having specificity against an epitope of a protein as claimed in claim 6.
8. An antibody as claimed in claim 7 labeled with a detectable substance and used to detect the protein in biological samples, tissues, and cells.
9. A method for detecting a nucleic acid molecule as claimed in claim 2 in a biological sample comprising
25 the steps of:
 - (a) hybridizing a nucleic acid molecule of claim 2 to nucleic acids of the biological sample, thereby forming a hybridization complex; and
 - (b) detecting the hybridization complex wherein the presence of the hybridization complex correlates with the presence of a nucleic acid molecule encoding the protein in the biological sample.
- 30 10. A method as claimed in claim 9 wherein nucleic acids of the biological sample are amplified by the polymerase chain reaction prior to the hybridizing step.
11. A method of diagnosing and monitoring cancer mediated by a tumor associated protein by determining the presence of a nucleic acid molecule encoding the tumor associated protein or the presence of the tumor associated protein wherein the tumor associated protein is protein phosphatase 4 regulatory
35 subunit (Genbank AJ271448); a protein product corresponding to Genbank AK001674; putative translation initiation factor (SUI1) (Genbank NM-005801); RNA helicase (Genbank AL359945); MIL1 protein, nuclear gene encoding mitochondrial protein (NM-015367); MacMarks protein (Genbank

X70326); chromosome 11 open reading frame 10 (c11orf10) (Genbank AF0867763); plakophilin 4 (PKP4) (Genbank NM-003628), or a protein encoded by the nucleic acid molecule as claimed in claim 2.

12. A method as claimed in claim 11 wherein the condition is breast cancer.

5 13. A method for preventing or treating a condition mediated by a tumor associated protein which is protein phosphatase 4 regulatory subunit (Genbank AJ271448); a protein product corresponding to Genbank AK001674; putative translation initiation factor (SUI1) (Genbank NM-005801); RNA helicase (Genbank AL359945); MIL1 protein, nuclear gene encoding mitochondrial protein (NM-015367); MacMarks protein (Genbank X70326); chromosome 11 open reading frame 10 (c11orf10) (Genbank
10 AF0867763); plakophilin 4 (PKP4) (Genbank NM-003628), or a protein encoded by the nucleic acid molecule as claimed in claim 2, comprising administering an effective amount of an antibody specific for the tumor associated protein.

14. A method as claimed in claim 13 wherein the cancer is breast cancer.

15 15. A vaccine to prevent cancer and/or to treat cancer comprising a tumor associated protein which is protein phosphatase 4 regulatory subunit (Genbank AJ271448); a protein product corresponding to Genbank AK001674; putative translation initiation factor (SUI1) (Genbank NM-005801); RNA helicase (Genbank AL359945); MIL1 protein, nuclear gene encoding mitochondrial protein (NM-015367); MacMarks protein (Genbank X70326); chromosome 11 open reading frame 10 (c11orf10) (Genbank
20 AF0867763); plakophilin 4 (PKP4) (Genbank NM-003628), or a protein encoded by the nucleic acid molecule as claimed in claim 2, or peptides derived from the protein, or synthetic peptides thereof, or any combination of these molecules.

16. A method to prevent cancer or to treat cancer in subjects who have a tumor associated protein on their cells comprising administering a vaccine for stimulating or enhancing in the subjects antibodies directed against the tumor associated protein wherein the tumor associated protein is protein phosphatase 4
25 regulatory subunit (Genbank AJ271448); a protein product corresponding to Genbank AK001674; putative translation initiation factor (SUI1) (Genbank NM-005801); RNA helicase (Genbank AL359945); MIL1 protein, nuclear gene encoding mitochondrial protein (NM-015367); MacMarks protein (Genbank X70326); chromosome 11 open reading frame 10 (c11orf10) (Genbank AF0867763); plakophilin 4 (PKP4) (Genbank NM-003628), or a protein encoded by the nucleic acid molecule as
30 claimed in claim 2.

17. A method for preventing patients from having tumors prior to their occurrence comprising administering a vaccine as claimed in claim 15.

18. A method for stimulating or enhancing in a subject production of antibodies directed against a tumor associated protein comprising administering to the subject a vaccine as claimed in claim 15 in a dose
35 effective for stimulating or enhancing production of the antibodies.

19. A methods for treating, preventing, or delaying recurrence of cancer comprising administering to the subject a vaccine as claimed in claim 15 in a dose effective for treating, preventing, or delaying

recurrence of cancer.

20. Use of a vaccine as claimed in claim 15 to treat, prevent, or delay recurrence of cancer.

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